



# HEAT INJURY PREVENTION

# References

- MCO 3500.27A Marine Corps ORM
- MCO P5102.1A
- NAVMED P-5010 Naval Preventive Medicine

# Purpose

- Commanders at all levels are responsible the planning and execution of a command sponsored heat injury prevention program set forth in MCO 6200.1E

# Requirements

- Inspect and evaluate all hot weather related operations and training.
- Assess the hazards and risk presented by the activity; determine controls and implement controls.
- Ensure safety requirements are imbedded in operating procedures.
- Provide safety training to personnel.
- Ensure training and education are obtained from medical personnel.

# Requirements (cont.)

- Conduct training using qualified medical personnel and include the types, causes, prevention and emergency treatment of heat casualties.
- Training shall include an explanation of the heat index, use of wet-bulb globe temperature (WBGT) and accompanying flag warning system.

# Heat Injuries

- Heat injuries may occur during physical training (PT) or any other hot weather operations of activities when personnel are:
  - Not properly hydrated or acclimatized,
  - Exposed to extreme heat,
  - In MOPP gear when required by the job,
  - Inside closed spaces, such as inside an armored vehicle,
  - Wears body armor.

# Heat Injury Contributing Factors

- Previous heat injury
- Alcohol consumption
- Use of dietary supplements
- Fatigue
- Skin trauma (sunburn)

# Prevention

- Three major ways to prevent heat injuries.
  1. Proper Hydration.
  2. Wet-bulb monitoring, appropriate work/rest cycles.
  3. Acclimatization.
- \* Proper training and awareness of health risk will minimize heat related injury/fatality.\*



# Hydration

- Proper hydration begins 24 to 48 hours in advance of long marches or high humidity environments.
- Prohibit:
  - Use of alcohol prior to the activity
  - Use of dietary/muscle building supplements prior to the activity
- Encourage:
  - Consumption of cool water over a 24 hour day.

# WBGT Monitoring

- The WBGT index is a good indicator of external heat stress on the body.
- Determines flag conditions and work/rest cycles.
- WBGT works by incorporating the effects of air velocity and humidity (wet bulb) and air temperature (dry) and radiant heat (globe temperature).

# Work/Rest Cycles

- The hour immediately after the noon and evening meals should be devoted to relaxation and non-strenuous training.

# Acclimatization

- Acclimatization defined:
  - The ability of the body to undergo physiological adaptations to function in a hot environment.
- NAVMED P-5010:
  - “A period of 3 weeks is optimal for acclimatization, with progressive degrees of heat exposure and physical exertion.”
  - “A minimum of 2 weeks is necessary for the acclimatization process.”

# Avoiding a Heat Injury

- Drink fluids frequently.
- Avoid salt tablets, unless prescribed by a physician.
- Avoid alcohol prior to training.
- Avoid prescription drugs or dietary supplements prior to training.
- Inform medical personnel of know family history of medical conditions, or prior heat related fainting or illness.

# Training

- Provide heat stress awareness training to new personnel prior to deployment into hot, dry, and humid environments.
- Training shall include the types, causes, symptoms, treatment, and prevention of heat injuries.

# Control Measures

- Conduct heat injury prevention awareness training prior to the operation.
- Ensure all personnel are acclimated to the environment prior to the operation.
- Ensure water consumption is a continuous process (prior to, during, and after the operation).
- Do not allow personnel to continue working or performing hot weather operations when they stop sweating.

# Control Measures (cont.)

- Reduce physical demands such as heavy lifting or digging with heavy objects.
- In heat stress conditions, schedule intermitted rest periods for water breaks.
- Large volumes of relatively clear urine indicates proper hydration. Small volumes or dark urine indicates dehydration.
- Wear loose clothing.
- Do not over hydrate.



# Flag Warning Conditions

- Green Flag (WBGTI of 80° to 84.9° F)
  - Heavy exercise, for unacclimatized personnel, will be conducted with caution and under constant supervision.

# Flag Warning Conditions

- Yellow Flag (WBGTI of 85° to 87.9° F)
  - Strenuous exercises, such as marching to standard cadence, will be curtailed for unacclimatized personnel for the first 3 weeks as per NAVMED P-5010.
  - Avoid outdoor classes in the sun.

# Flag Warning Conditions

- Red Flag (WBGTI of 88° to 89.9° F)
  - All PT will be curtailed for those personnel who have not been thoroughly acclimated by at least 12 weeks as per NAVMED P-5010.
  - Those personnel who are fully acclimated may carry on limited activity not to exceed 6 hours per day.

# Flag Warning Conditions

- Black Flag (WBGTI 90° and above)
  - All nonessential physical activity will be halted for all units.

# Questions??

